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Where the Rubber Hits the Road: Steering the Trial Court through a Post-Kumho Tire Evaluation of Expert Testimony

Sarah Brew

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WHERE THE RUBBER HITS THE ROAD: STEERING THE TRIAL COURT THROUGH A POST-KUMHO TIRE EVALUATION OF EXPERT TESTIMONY

By Sarah Brew†

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I. INTRODUCTION

Beginning with its landmark decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the United States Supreme Court has continued to expand the trial court's role in evaluating the reliability of proffered expert testimony before it reaches the jury. In *Kumho Tire Co. Ltd. v. Carmichael*, 526 U.S. 137 (1999), its most recent refinement of *Daubert*, the Supreme Court clarified that this "gate-keeping" function is not limited to complex scientific testimony. Rather, the trial court must scrutinize all types of proffered expert testimony, applying whichever measures of reli-

† Ms. Brew, a 1990 graduate of the University of Minnesota Law School, practices product liability and complex litigation at Greene Espel, P.L.L.P. She wishes to thank her colleagues Kristen Anderson and Clifford Greene for their contributions to this article.

ability it deems appropriate, which may or may not include the *Daubert* factors.

This places a heavy burden on the trial court, especially in a products liability action. The court not only must analyze expert testimony on a variety of issues – general causation, specific causation, damages, etc. – but also must determine which *Daubert* factors or other measures of reliability should apply to that evaluation. Ultimately, the task of steering the court along this complicated path falls on attorneys.

This article begins with a discussion of expanding judicial scrutiny of expert testimony through the vehicles of *Daubert*, *Joiner* and *Kumho Tire*. The article then analyzes the post-*Kumho Tire* framework under which the trial court must discharge its duties as gatekeeper. The article concludes with an exploration of non-*Daubert* reliability factors that may apply to expert testimony in products liability actions.

II. THE PRE-*DAUBERT* ERA

Before *Daubert*, the trial court's role as to expert testimony was both clearly defined and relatively straightforward: evaluate the expert's qualifications to ensure they satisfied Federal Rule of Evidence 702,¹ determine whether the expert's testimony was relevant to the issues at trial and was supported by adequate foundation as required by Federal Rule of Evidence 703,² and then simply subject the expert's testimony to the collective wisdom of the jury deliberation process. Courts were reluctant to examine the substantive validity of an expert's testimony and seldom excluded a qualified expert's testimony for any reason other than potential prejudice or

1. Fed. R. Evid. 702 provides
Testimony by Experts. If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Id.

2. FED. R. EVID 703(a) provides:
Bases of Opinion Testimony by Experts. (a) The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

Id.

irrelevance.³ Flaws and inadequacies in opinions were something to be exposed through cross-examination. Thus, courts typically deferred to the jury's determination as to the merits of an expert's testimony. "If a judge prevents an expert from testifying on the ground that the expert or his opinions seem unreliable, the judge interferes with the jury's exercise of these powers."⁴

Only when trial courts were faced with expert testimony in a new scientific or technical arena would they occasionally apply the "general acceptance" test articulated in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923),⁵ to determine whether the testimony should be heard by the jury. Yet, *Frye* required judges only to determine whether the methodology was generally accepted within the appropriate scientific community, not to evaluate the science underlying the expert's opinion. *Frye* recognized that courts are not laboratories and acknowledged the realistic limitations of judges to comprehend scientific evidence. Thus, *Frye* set down a convenient *proxy* for assuring the competency of scientific evidence, namely consensus within the scientific community.⁶

Although the *Frye* opinion was not restricted to the analysis of new, evidence-generating instruments, it was nonetheless applied most often to evaluate the admissibility of devices and procedures such as the polygraph or DNA testing in criminal cases, where such evidence may appear incontrovertible if deemed accurate. Civil courts generally ignored *Frye* except in cases involving paternity determinations through blood testing.⁷ Though seldom applied, the

3. *E.g.*, CHARLES TILFORD MCCORMICK, EVIDENCE 874-75 (4th ed. 1992) ("Any relevant conclusions supported by a qualified expert witness should be received unless there are distinct reasons for exclusion. These reasons are the familiar ones of prejudicing or misleading the jury or consuming undue amounts of time.").

4. 29 CHARLES ALAN WRIGHT, FEDERAL PRACTICE AND PROCEDURE § 6266, at n.15 (1997).

5. In *Frye*, the D.C. Court of Appeals excluded expert testimony regarding the results of a systolic blood pressure lie-detector test because the test had not yet gained "general acceptance" in the scientific community. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923).

6. The concept of "acceptance in the scientific community" generated many questions: In which scientific "community" must there be consensus? How is consensus determined – is a substantial minority enough? *E.g.*, *State v. Fenney*, 448 N.W.2d 54 (Minn. 1989). How is "consensus" proven in court? Under *Frye*, a court could predetermine the outcome by how it answered these questions as to the relevant scientific community and the meaning of "consensus." *Frye*, 293 F. at 1014.

7. DAVID W. LOISELL & CHRISTOPHER B. MUELLER, FEDERAL EVIDENCE 853 (1977).

Frye test remained the standard in federal courts for 70 years, and to this day remains the basic test of admissibility in some state courts.⁸

As science in the courtroom became more commonplace, the *Frye* standard was criticized for excluding evidence based upon new but reliable scientific techniques simply because the techniques had not yet had time to gain "general acceptance" in the scientific community. As one court explained, the *Frye* test "emphasizes 'counting scientists' votes rather than verifying the soundness of a scientific conclusion."⁹ Applied literally, the *Frye* test could exclude legitimate cutting-edge science offered prior to the formation of any scientific consensus.¹⁰ At the same time, it could allow the introduction of scientific testimony that was generally accepted, but simply wrong.

After the enactment of the Federal Rules of Evidence in 1975, courts began to scrutinize expert testimony more closely, expressing concern for the jury's ability to assess the validity of complex scientific theories.¹¹ During the following decade, as complex medical and toxic tort cases mushroomed,¹² the role of experts in litigation was criticized as "junk science," "litigation medicine" and "fringe science," both by commentators¹³ and courts.¹⁴ This

8. Minnesota is one such state. The Minnesota Supreme Court recently rejected *Daubert*, choosing instead to adhere to the state's modified *Frye* test, termed *Frye-Mack*. *Goeb v. Tharaldson*, __N.W.2d__ (Aug. 17, 2000). The *Mack* prong of the *Frye-Mack* standard requires not only that the scientific technique be generally accepted in the relevant scientific community, but also that the particular evidence derived from that technique has a foundation that is scientifically reliable. *State v. Mack*, 292 N.W.2d 764, 768-69 (Minn. 1980).

9. *People v. Wesley*, 633 N.E.2d 451, 439 (Kaye, C.J., concurring) (quoting *Jones v. United States*, 548 A.2d 35, 42 (App. D.C. 1988)).

10. *WRIGHT & GOLD*, *supra* note 5, § 6266, at n.15.

11. *O'Connor v. Commonwealth Edison*, 807 F. Supp. 1376, 1391 (C.D. Ill. 1992), *aff'd*, 13 F.3d 1090 (7th Cir. 1994) ("The court is concerned that the jury may blindly accept an expert's opinion that conforms with their underlying fears of toxic substances without carefully examining the basis for that opinion.").

12. Comment, *Sharpening the Focus on Daubert's Distinction Between Scientific and Nonscientific Expert Testimony*, 34 SAN DIEGO L. REV. 1719, 1721 (1997) (hypothesizing that the use of expert testimony has increased proportionately with the increase of technology in society).

13. P. Gianelli, *Junk Science: The Criminal Cases*, 84 J. CRIM. L. & CRIMINOLOGY 105 (1993). See generally PETER W. HUBER, *GALILEO'S REVENGE: JUNK SCIENCE IN THE COURTROOM* (1991), which popularized the term "junk science." But see Daniel Shuman, et al., *An Empirical Examination of the Use of Expert Witnesses in the Courts—Part II: A Three City Study*, 34 JURIMETRICS J. 193, 194 (1994) (positing that the "criticism of the use of expert witnesses in the courts as junk science has itself lacked scientific rigor").

"anti-expert" atmosphere set the stage for the Supreme Court's 1993 decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*¹⁵

III. THE EVOLUTION OF RULE 702: *DAUBERT*, *JOYNER* AND *KUMHO TIRE*

Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993),¹⁶ is often preceded by the adjective "landmark" for two good reasons. First, *Daubert* rejected *Frye's* "rigid general acceptance requirement" as contradictory to the "liberal thrust" of the Federal Rules of Evidence,¹⁷ replacing it with a variety of criteria for scientific reliability. Second, *Daubert* specifically anointed the trial court as the "gatekeeper" to determine whether an expert's testimony pertains to "scientific knowledge."¹⁸ This gate-keeping role involves two functions: first, the trial court must determine whether the reasoning and methodology underlying the expert's testimony "can properly be applied to the facts at issue" – that is, whether it is relevant; and, second, the trial court must determine whether the reasoning or methodology underlying the testimony is "scientifically valid."¹⁹ To make this last assessment, the trial court should

14. E.g., *O'Connor*, 807 F. Supp. at 1401. The court noted The importance of safeguarding the integrity of the [judicial] process requires the trial [or appellate] judge, when he believes that an expert's testimony has fallen below professional standards, to say so, as many judges have done. Professor Bryan cast aside his scholar's mantle and became a shill [for the plaintiff]; Judge Hart, by observing that the emperor had no clothes, protected the interests of the judicial system.

15. 509 U.S. 579 (1993). *Daubert* addressed the admissibility of expert testimony purportedly linking Bendectin, a prescription anti-nausea drug, to birth defects. *Id.* at 582. Plaintiff's experts, all of whom were well-credentialed, intended to testify that they found a causal correlation between ingestion of Bendectin during pregnancy and limb deformities. *Id.* at 583. The experts based their conclusions not on human studies, but on "in vitro" (test tube) and "in vivo" (live) studies, which were not generally accepted within the field of epidemiology. *Id.* The trial court granted Merrell Dow's summary judgment motion after finding that the plaintiffs' expert testimony was not based on valid epidemiological methods and was therefore inadmissible because it was not grounded in "generally accepted" scientific evidence. *Daubert*, 727 F. Supp. 570 (S.D. Cal. 1989). The Ninth Circuit Court of Appeals affirmed, applying the *Frye* test. *Daubert*, 951 F.2d 1128 (9th Cir. 1990).

16. Despite its renown, the pronunciation of "Daubert" remains varied. The preferred pronunciation is "Dow-burt". See Michael H. Gottesman, *Admissibility of Expert Testimony After Daubert: The "Prestige" Factor*, 43 EMORY L. J. 867 (1994).

17. *Daubert*, 509 U.S. at 589 (quoting *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 169 (1988)).

18. *Id.* at 589-90.

19. *Id.* at 592-93.

consider the following non-exclusive factors, which are now well-known as the "*Daubert* factors":

- (1) Whether the scientific theory or technique can be or has been tested;
- (2) Whether the theory or technique has been subject to peer review or publication;
- (3) The known or potential rate of error; and
- (4) The general acceptance of the theory or technique in the scientific community.²⁰

Ultimately, *Daubert* is a compromise. It acknowledges that judges are probably ill suited to evaluate the merits of scientific opinions, or at least no better suited than are juries. Accordingly, judges are instructed to look to certain factors that are indicia of reliability, rather than to confirm the reliability of the science itself. While the judge need not understand the science being offered, the judge must find circumstances suggesting its legitimacy, such as peer-reviewed publication, reproducible results, and the former proxy for reliability, "general acceptance."²¹

But even this relatively limited foray into the scientific process underlying an expert's opinion imposes a heavy burden on trial judges. Rather than simply deferring to the "general acceptance" of the experts themselves, trial judges must weigh a complex set of philosophical and methodological factors to determine the admissibility of proffered scientific evidence.²² In other words, *Daubert* requires trial judges to replace their judicial robes with lab coats and to become "amateur scientists."²³ Courts, however, are typically ill-equipped to perform this function. Law and science use differ-

20. *Id.* at 593-94. General acceptance in the scientific community, the former *Frye* test, has therefore been diminished to a single reliability factor. While "general acceptance" in the scientific community is not required, a known technique that has attracted only minimal support among scientists "may properly be viewed with skepticism." *Id.* at 594.

21. *Daubert* also endorses the traditional means of testing evidence through the adversary process rather than wholesale exclusion of evidence through an uncompromising test. "Vigorous cross-examination, presentation of contrary evidence and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky evidence." *Id.* at 597.

22. Brian Leiter, *The Epistemology of Admissibility: Why Even Good Philosophy of Science Would Not Make for Good Philosophy of Evidence*, 1997 BYU L. REV. 803, 804 (1997).

23. *Daubert*, 509 U.S. at 601 (Rehnquist, C.J., concurring in part and dissenting in part).

ent methodologies and have different goals.²⁴ Lawyers and judges typically do not have the educational foundation to evaluate fully quantitative, scientific and technical information.²⁵ In fact, the *Daubert* opinion itself appears to contemplate this possible pitfall and a related judicial recalcitrance to delve into scientific analysis by suggesting that courts could be assisted in their gate-keeping duties by appointing neutral experts pursuant to Federal Rule of Evidence 706.²⁶

As the Court anticipated, many judges were reluctant to replace *Frye's* straight-forward general acceptance test with *Daubert's* more challenging analysis.²⁷ The Ninth Circuit panel that addressed *Daubert* on remand was openly skeptical. The panel noted that the judge's responsibility under *Daubert* is "a far more complex and daunting task" than applying the relatively simple *Frye* test, particularly when judges are faced with "matters at the very cutting

24. Marilee Kapsa & Carl Meyer, *Scientific Experts: Making Their Testimony More Reliable*, 35 CAL. W. L. REV. 313, 321 (1999). See also Alexander Morgan Capron, *Daubert And The Quest For Value-Free 'Scientific Knowledge' in The Courtroom*, 30 U. RICH. L. REV. 85, 85 n.2 (1996). Capron stated:

Science is essentially descriptive, positive and predictive. The goal is to tell us what is and what will be in the future. Law, on the other hand, is prescriptive and normative. The effort is to tell us what ought to be, to define rules of conduct and responsibility grounded in events of the past.

Id.

25. Saks, *What Do Jury Experiments Tell Us About How Juries (Should) Make Decisions?*, 6 S.CAL. INTERDISC. L.J. 1, 42-43 (1997). Saks contends

[L]awyers are people who, disproportionately more than most educated Americans, are uncomfortable with quantitative, scientific, and technological information; avoided it as students, and are incompetent with it as adults. By contrast, a well assembled jury containing a high school science teacher, an accountant, or an engineer, should have greater potential than the average judge to understand complex technical or quantitative evidence.

Id.

26. FED. R. EVID. 706. Court-appointed experts, though employed by some courts, are typically not favored by courts or commentators. See generally Note, *Improving Judicial Gatekeeping: Technical Advisors and Scientific Evidence*, 110 HARV. L. REV. 941 (Feb. 1997); Ned Miltenberg, *Myths About 'Neutral' Scientific Experts*, TRIAL Jan. 2000; Carl Meyer, *Science and Law: The Quest for the Neutral Expert: A View From the Trenches*, 13 J. ENERGY NAT. RESOURCES & ENVTL. L. 36 (1997).

27. See generally Erica Beecher-Monas, *Blinded By Science: How Judges Avoid the Science in Scientific Evidence*, 71 TEMP. L. REV. 55 (1998). The fear that *Daubert* would place ill-suited responsibilities on trial judges prompted a number of states to retain *Frye*. E.g., *Flanagan v. State*, 625 So. 2d 827, 828 (Fla. 1993). "[A] courtroom is not a laboratory, and as such it is not the place to conduct scientific experiments. If the scientific community considers a procedure or process unreliable for its own purposes, then the procedure must be considered less reliable for courtroom use."

edge of scientific research, where fact meets theory and certainty dissolves into probability."²⁸

Judicial resistance to *Daubert* was most clearly manifested through attempts to avoid gate-keeping responsibilities by interpreting *Daubert* as applicable only to "scientific" expert testimony, not to testimony based on "technical or other specialized knowledge."²⁹ Under this view, the *Daubert* framework applied only to "seemingly infallible scientific devices, processes and theories" and to expert opinions relying upon "the natural laws of science";³⁰ it therefore did not apply to expert testimony based upon experience and observation, such as engineering opinions,³¹ medical causation opinions³² and warnings-related opinions.³³

A majority of lower courts, however, interpreted *Daubert* as imposing a gate-keeping obligation to scrutinize any type of proffered expert testimony. These courts concluded that *Daubert's* guiding principles applied to all expert testimony because Rule 702 governs the admissibility of expert evidence regarding not only "scientific,"

28. *Daubert*, 43 F.3d at 1315-16. The panel reluctantly accepted its gate-keeping role: "Mindful of our position in the hierarchy of the federal judiciary, we take a deep breath and proceed with this heady task." *Id.* at 1316.

29. These courts commonly cited Chief Justice Rehnquist's partial dissent in *Daubert*, which questioned whether the majority standard would apply to "an expert seeking to testify on the basis of 'technical or other specialized knowledge.'" *Daubert*, 509 U.S. at 600 (Rehnquist, C.J., concurring in part and dissenting in part). The *Daubert* majority did not address this question because the nature of the expertise at issue was "limited to the scientific context." *Id.* at 590 n.8. The majority did note, however, that "Rule 702 also applies to 'technical, or other specialized knowledge.'" *Id.*

30. See generally WRIGHT & GOLD, *supra* note 4, § 6266, at n.62-63 (noting areas where courts have extended and refused to extend the *Daubert* analysis).

31. E.g., *McKendall v. Crown Control Corp.*, 122 F.3d 803 (9th Cir. 1997) (concluding that *Daubert* does not apply to testimony based on expert's engineering experience and his having investigated hundreds of fork lift cases over the past thirty years); *Compton v. Subaru of Am., Inc.*, 82 F.3d 1513 (10th Cir. 1996) (holding that *Daubert* factors are applicable "only when a proffered expert relies on some principle or methodology," not "in cases where expert testimony is based solely upon experience or training," and allowing a mechanical engineer to testify as to defective vehicle design under a traditional Rule 702 analysis).

32. E.g., *Moore v. Ashland Chem. Inc.*, 151 F.3d 269 (5th Cir. 1998) (concluding that clinical medicine, as opposed to research and laboratory medical science, is not a hard science discipline; *Daubert* factors, which are techniques derived from hard science methodology, are, as a general rule, inappropriate for use in making the reliability assessment of expert clinical medical testimony).

33. E.g., *Yamaha Motor Co., USA v. Arnoult*, 955 P.2d 661 (Nev. 1998) (holding that assessment of warnings by a qualified expert were admissible as "specialized knowledge;" *Daubert* criteria specifically limited to subjects of expertise totally governed by the scientific method).

but also "technical, or other specialized knowledge."³⁴ Therefore, *Daubert's* analysis spread to expert opinions of any kind, including testimony regarding engineering principles and design defects,³⁵ accounting and damages issues³⁶ and even such "soft sciences" as psychology and sociology.³⁷

The Supreme Court first addressed lower courts' *Daubert*-related confusion in *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), in which it resolved a circuit split over the proper standard of review to apply to a district court's ruling on the admission of expert testimony. Some circuits applied the same standard of review as they would to any evidentiary determination—abuse of discretion.³⁸ Other circuits scrutinized district court decisions regarding expert testimony, which often arose in a summary judgment

34. *E.g.*, *Watkins v. Telsmith Inc.*, 121 F.3d 984 (5th Cir. 1997) (holding that *Daubert* applies to all types of expert testimony including a civil engineer's testimony based on his training and experience, in a conveyor design defect case).

35. *E.g.*, *Navarro v. Fuji Heavy Indus., Ltd.*, 117 F.3d 1027, 1032 (7th Cir. 1997) (applying *Daubert* to affidavit of expert, an experienced consultant in the fields of failure analysis, mechanical safety and accident reconstruction, and affirming grant of summary judgment because affidavit was "nakedly conclusional"); *Surace v. Caterpillar Inc.*, 111 F.3d 1039, 1055 (3d Cir. 1997) (affirming the district court's decision, in a design defect case, to exclude the testimony of an electro-magnetic engineer under *Daubert*); *Cummins v. Lyle Indus.*, 93 F.3d 362, 367-368 (7th Cir. 1996) (noting that our inquiry is governed by *Daubert* and affirming exclusion of proposed engineering testimony on alleged design defect in trim press); *Deimer v. Cincinnati Sub-Zero Prods., Inc.*, 58 F.3d 341, 344-45 (7th Cir. 1995) (holding that testimony of proffered expert regarding alleged design defect in hypothermia machine was inadmissible under *Daubert* where expert did not conduct any studies or apply his analysis to the facts of the case); *Dancy v. Hyster Co.*, 127 F.3d 649 (8th Cir. 1997) (applying *Daubert* to proposed testimony of mechanical engineer regarding defective design of forklift and finding testimony inadmissible because, *inter alia*, it "could be, but had not been, tested"); *Peitzmeier v. Hennessy Indus., Inc.*, 97 F.3d 293, 297 (8th Cir. 1996) (stating that the "*Daubert* analysis is properly applied" to proposed testimony of engineering expert regarding alleged design defect in tire changer and excluding testimony as "wholly speculative").

36. *E.g.*, *Frymire-Brinati v. KPMG Peat Marwick*, 2 F.3d 183 (7th Cir. 1993) (applying *Daubert* to exclude accountant's opinion of market valuation because accountant failed to follow generally accepted accounting principles); *Ventura v. Titan Sports, Inc.*, 65 F.3d 725 (8th Cir. 1995) (affirming district court's admission of expert's damages testimony under *Daubert*).

37. *E.g.*, *Tyus v. Urban Search Mgmt.*, 102 F.3d 256 (7th Cir. 1996) (assessing under *Daubert* the admissibility of two of plaintiff's proffered experts—a professor of sociology and a person with expertise in the areas of psychology, statistics and marketing—in a racial discrimination case).

38. *E.g.*, *Compton v. Subaru of Am., Inc.*, 82 F.3d 1513, 1519 (10th Cir. 1996) (holding abuse of discretion standard of review applies to trial court's decision to admit expert testimony under *Daubert*).

ment context, under a higher or even *de novo* standard of review.³⁹ *Joiner* rejected a "particularly stringent" standard of review and held that appellate courts should apply an "abuse of discretion" standard to district courts' rulings on the admissibility of expert testimony.⁴⁰

Joiner also addressed, in dicta, *Daubert's* gate-keeping duty, explaining that the trial court should examine not only the expert's methodology, but also his or her conclusions.⁴¹ As the majority elaborated, "nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert."⁴² Even if the expert's methodology falls within scientific boundaries, the trial court may still conclude that there is simply too great an analytical gap between the data and the opinion proffered.⁴³ But *Joiner* lacked the factual foundation necessary for the Supreme Court to resolve the conflict as to whether *Daubert's* analysis applied to both "scientific" and "technical" expert testimony.⁴⁴

The Court finally confronted this contentious issue in *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999), holding that *Daubert's* gate-keeping obligation extends to *all* expert testimony, whether based on "scientific" or "nonscientific" knowledge.⁴⁵ As the Supreme Court explained, Federal Rule of Evidence 702 applies a reliability standard to all "scientific, technical, or other specialized knowledge," making no relevant distinction between these catego-

39. *E.g.*, *Gen. Elec. Co. v. Joiner*, 78 F.3d 524, 533 (11th Cir. 1996) (applying a "particularly stringent" standard of review and reversed the district court's decision to exclude expert testimony that occupational PCB exposure caused plaintiff's cancer).

40. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 141-43 (1997).

41. *Id.* at 146. *Contra* *Alexander v. Smith & Nephew P.L.C.*, 98 F. Supp.2d 1310 (N.D. Okla. 2000) ("The Court does not focus on an expert's conclusions but on whether his principles and methodology are sound.").

42. *Joiner*, 522 U.S. at 146.

43. *Id.* For an argument that *Joiner* "expresses a normative judgment that judges are to be trusted more than juries" when science and law intersect, see Lucinda Finley, *Guarding the Gate to the Courthouse: How Trial Judges are Using Their Evidentiary Screening Role to Remake Tort Causation Rules*, 49 DEPAUL L. REV. 335 (1999).

44. *Joiner* was comparable to *Daubert* in that it involved a "hard science" expert prepared to testify about the causal link between a certain agent and potential health effects. See *Joiner*, 522 U.S. at 143.

45. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 147 (1999). The Court acknowledged that its decision in *Daubert* referred only to "scientific knowledge," but explained that this was so only because the expertise at issue was scientific in nature. *Id.* at 147.

ries.⁴⁶ To conclude otherwise would create differing systems of evidentiary rules dependent upon an artificial distinction between "types" of expert testimony offered: "Pure scientific theory itself may depend for its development upon observation and properly engineered machinery. And conceptual efforts to distinguish the two are unlikely to produce clear legal lines capable of application in particular cases."⁴⁷

Therefore, when faced with any proffered expert testimony, whether characterized as "scientific" or "technical," the trial judge must determine whether the testimony has "a reliable basis in the knowledge and experience of [the relevant] discipline." The *Daubert* factors may be applicable to this analysis if they are "reasonable measures of the reliability of expert testimony" under the particular circumstances of the particular case at issue.⁴⁸ However, the test of reliability is a "flexible one," and the *Daubert* factors do not constitute a "definite checklist or test" that "neither necessarily nor exclusively applies to all experts or in every case."⁴⁹

Although the trial court cannot avoid its ultimate obligation to ensure the reliability of expert testimony, it has broad latitude in deciding how to make that reliability determination.⁵⁰ The trial

46. *Kumho Tire*, 526 U.S. at 147. The case arose from an automobile accident that plaintiffs alleged was caused by a design or manufacturing defect in the vehicle's tire. *Id.* at 137. The District Court applied *Daubert* and excluded the testimony of plaintiffs' expert in tire failure analysis. *Id.* The Eleventh Circuit Court of Appeals reversed, holding that *Daubert's* analysis applies "only where an expert relies 'on the application of scientific principles,' rather than 'on skill - or experience-based observation.'" *Carmichael v. Samyang Tire, Inc.*, 131 F.3d 1433 (11th Cir. 1997).

47. *Kumho Tire*, 526 U.S. at 148. Justice Breyer emphasized, however, that the judge's gate-keeping function must not invade the province of the jury, which bears the responsibility to "decide among conflicting views of different experts, even though the evidence is 'shaky.'" *Id.* at 153.

48. *Id.* at 153.

49. *Id.* at 150. The Court explained why the *Daubert* factors might not apply: It might not be surprising in a particular case, for example, that a claim made by a scientific witness has never been the subject of peer review, for the particular application at issue may never previously have interested any scientist. Nor, on the other hand, does the presence of a *Daubert's* general acceptance factor help show that an expert's testimony is reliable where the discipline itself lacks reliability, as, for example, do theories grounded in any so-called generally accepted principles of astrology or necromancy.

Id. at 151.

50. *Id.* at 152. As Justice Scalia elaborated in his concurrence: The trial court's discretion in choosing the manner of testing expert reliability is not discretion to abandon the gate-keeping function. *Id.* at 158-59. (Scalia, J., concurring.)

judge should consider the nature of the case, the expert's particular expertise, and the subject of his or her testimony, keeping in mind that the ultimate objective of *Daubert* "is to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same levels of intellectual rigor that characterizes the practice or an expert in the relevant field."⁵¹

While *Kumho Tire* clarifies that the *Daubert* analysis must be applied to all expert testimony, it expands the gate-keeping mandate to the trial court: instead of simply applying the *Daubert* factors to an expert's proffered testimony, the trial court must now first determine which of those factors apply, if any, and which other "reasonable measures of reliability" may be appropriately applied, given the type of case, the expert's particular expertise and the subject matter of the expert's testimony.⁵² To complicate matters, the trial court must undertake this exercise for each expert whose testimony is at issue. The potential magnitude of this undertaking in a products liability action should not be underestimated. Trial courts faced with opinions in a variety of fields, each of which employs different methodologies and operates on different assumptions, will invariably look to the attorneys to help identify the framework under which to evaluate each expert's testimony and to understand how that framework applies to the testimony at issue.

IV. *KUMHO TIRE*: WHERE THE RUBBER HITS THE ROAD

Kumho Tire adds an extra dimension to the *Daubert* analysis.

"Rather, it is discretion to choose among *reasonable* means of excluding expertise that is *fausse* and science that is junky. Though, as the Court makes clear today, the *Daubert* factors are not holy writ, in a particular case the failure to apply one or another of them may be unreasonable, and hence an abuse of discretion." *Id.* at 159.

51. *Id.* at 152.

52. As with *Daubert* before it, *Kumho Tire* has elicited criticism from courts and legal commentators alike. *E.g.*, *United States v. Hines*, 55 F. Supp.2d 62, 67 (D. Mass. 1999) (interpreting *Kumho Tire* as sending a "mixed message": "[a]pply *Daubert* to technical fields, even though the scientific method may not really fit, but be flexible"); see also Comment, *Opening the Door But Keeping the Lights Off: Kumho Tire Co. v. Carmichael and the Applicability of the Daubert Test to Nonscientific Evidence*, 50 CASE W. RES. L. REV. 177 (1999); Kimberly M. Hrabosky, *Kumho Tire v. Carmichael: Stretching Daubert Beyond Recognition*, 8 GEO. MASON L. REV. 203 (1999). But see *Black v. Food Lion, Inc.*, 171 F.3d 308, 310-11 (5th Cir. 1999) ("*Kumho Tire* refines in a common-sense way, but does not undermine, the use of the specific *Daubert* factors as a reference point for gauging the reliability of potential expert testimony.").

Before the trial court undertakes the substantive analysis of an expert's proffered testimony, it must first determine which factors should inform that analysis. The court should begin its examination with the four *Daubert* factors.⁵³ In some cases, all the *Daubert* factors will apply squarely. Expert "scientific" testimony on issues of general causation, as in *Daubert* and *Joiner*, for instance, should typically be subject to a garden-variety *Daubert* analysis. But not all *Daubert* factors may be pertinent in every instance of scientific testimony.⁵⁴ For example, a legitimate scientific claim may not have been subject to peer review if no scientist or publication had an interest in the specific application.⁵⁵

Even proffered expert engineering testimony, which often rests on the personal knowledge or experience of the engineer, may invoke the *Daubert* factors.⁵⁶ By way of example, two of the *Daubert* inquiries – (1) whether the expert's hypothesis can be and has been tested; and (2) whether the theory or techniques used to develop the theory is generally accepted within the relevant community – may be meaningful measures of the reliability of expert engineering testimony regarding the design of an aerosol spray can.⁵⁷ While there is no technical discipline of "aerosol can design" or any journals or treatises specifically devoted to that topic, certain general scientific and engineering principles are applicable to the design of aerosol cans, and their application to aerosol spray can design can be analyzed under these two other *Daubert* factors.⁵⁸

53. *Black*, 171 F.3d at 311; *Smith v. Borden, Inc.*, 188 F.R.D. 257, 260 (M.D. La. 1999); *Nugent v. Hercules Offshore Corp.*, No. Civ. A 98-3060, 2000 WL 381925 (E.D. La. Apr. 14, 2000).

54. *Kumho Tire*, 526 U.S. at 151. Ironically, *Kumho Tire* creates the possibility that a court could determine that only the "general acceptance" factor applies, thereby analyzing the expert testimony under the *Frye* standard.

55. *Id.*

56. *Id.* As explained in *Kumho Tire*, when an expert posits an experience-based methodology, the court should ascertain:

how often an engineering expert's experience-based methodology has produced erroneous results, or whether such method is generally accepted in the relevant engineering community. Likewise, it will at times be useful to ask even of a witness whose expertise is based purely on experience...whether his preparation is of a kind that others in the field would recognize as acceptable.

Id.

57. *Smith*, 188 F.R.D. at 257.

58. *Id.* See also *Donnelly v. Ford Motor Co.*, 80 F.Supp.2d 45, 49-50 (E.D. N.Y. 1999) (finding that "the four *Daubert* factors are an appropriate starting point for assessing the reliability" of an engineering expert's opinion and, after applying the factors, excluding the expert's testimony as unreliable given the absence of any

Once the trial court considers the *Daubert* factors, the court may then consider whether other "reasonable measures of reliability," not mentioned in *Daubert*, may be appropriate to the evaluation of the expert testimony at issues.⁵⁹ While these "reasonable measures of reliability" have yet to be delineated by what promises to be an expansive body of case law, *Kumho Tire* gives some suggestions, as do other recent product liability cases, of the types of questions attorneys and courts should contemplate when confronting proffered expert testimony in a products liability action.

A. *Did The Expert Employ The Same "Intellectual Rigor" In The Courtroom As Required In The Laboratory Or Field?*

While the *Daubert* factors may easily apply to "hard science" opinions, those same factors may not contribute to a meaningful analysis of an expert's fact-dependent methodology.⁶⁰ In those instances, the gate-keeping court may analyze the reliability of the expert's testimony under *Kumho Tire*'s mandate that the expert employ "in the courtroom the same level of intellectual rigor that characterizes the practice of the expert in the relevant field."⁶¹ For instance, a professional engineer's conclusion, based on his own inspection, that a tile floor was "slippery" and that overhead lighting was "inadequate," without some explanation of the methods and objective standards employed to make those determinations, fails to adhere to the standards of intellectual rigor that are demanded of civil engineers.⁶² Even when an expert relies on "textbook models" and "well-established formulae," the expert may not apply them

underlying methodology or reasoning).

59. *Black*, 171 F.3d at 311; *Smith*, 188 F.R.D. at 261.

60. *E.g.*, *Nugent v. Hercules Offshore Corp.*, No. Civ. A 98-3060, 2000 WL 381925 (E.D. La. Apr. 14, 2000) (recognizing that the court should first attempt to apply the *Daubert* factors, but analyzing failure expert's testimony under an "intellectual rigor" inquiry).

61. *Kumho Tire*, 526 U.S. at 147.

62. *Borgognone v. Trump Plaza*, No. 98-CV-6139, 2000 WL 341135 (E.D.N.Y., March 9, 2000) *citing Kumho Tire*, 526 U.S. at 151, and *Braun v. Lorillard, Inc.*, 84 F.3d 230, 234 (7th Cir. 1996); *see also Donnelly v. Ford Motor Co.*, 80 F. Supp.2d 45, 49-50 (E.D.N.Y. 1999) (concluding that engineering expert who offered conclusions without explaining the reasoning or methodology by which he reached them failed to apply the requisite "intellectual rigor"); *Rutigliano v. Valley Bus. Forms*, 929 F. Supp. 779, 786 (D.N.J. 1996) ("Dr. Pantiz's conclusions derive from her unquantifiable personal experience and instinct, not from scientific theory and reasoning. This is not the type of expert scientific reasoning that the Court may submit to a jury."), *aff'd*, 118 F.3d 1577 (3d Cir. 1997).

as would other experts in the field.⁶³ Likewise, the expert may fail to comply with the scientific norm if he applies valid models or formulae to data that would not be trusted in the laboratory.⁶⁴

Courts are especially apt to conclude that an expert's testimony lacks the requisite "intellectual rigor" when the expert's opinions, or the underlying methodology, were developed solely in a litigation context.⁶⁵ For instance, when the *Daubert* case was remanded, the Ninth Circuit questioned the reliability of plaintiffs' experts' opinions, not because these experts were unqualified or solely because their methodology may have been suspect, but also because none had studied the matters upon which their testimony was offered outside of a litigation context.⁶⁶ A significant factor to the court was "whether the experts are proposing to testify about matters growing naturally and directly out of research that they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying" since "a scientist's normal workplace is the lab or the field, not the courtroom or the lawyer's office."⁶⁷ Other courts have similarly rejected expert testimony developed in a litigation context, even where the expert was qualified and the methodology and resulting opinions may have superficially satisfied *Daubert's* testing⁶⁸ and

63. *E.g.*, *Edwards v. Safety-Kleen Corp.*, 61 F. Supp. 2d 1354, 1357 (S.D. Fla. 1999).

64. *Id.*

65. *Wade-Greaux v. Whitehall Lab., Inc.*, 874 F. Supp. 1441, 1479 (D.V.I. 1994), *aff'd*, 46 F.3d 1120 (3d Cir. 1994) ("In evaluating the scientific validity or reliability of a particular methodology, it is also appropriate for a trial court to consider whether the methodology is used in a non-judicial setting. If a methodology has not been put to any non-judicial use, it weighs against admissibility."). This case and those cited *infra* at notes 67-70 suggest an intersection between the expert's credibility and the reliability of his or her testimony. The unarticulated assumption is that an expert's bias, whether conscious or unconscious, in favor of the party by whom he or she is employed will influence the reliability of his or her opinions. *See also* *Claar v. Burlington N. R.R. Co.*, 29 F.3d 499 (9th Cir. 1994) ("[S]cientists whose conviction about the ultimate conclusion of their research is so firm that they are willing to aver under oath that it is correct prior to performing the necessary validating tests could properly be viewed by the district court as lacking the objectivity that is the hallmark of the scientific method.").

66. *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311, 1317 (9th Cir. 1995). The court further noted, "While plaintiffs' scientists are all experts in their respective fields, none claims to have studied the effect of Bendectin on limb reduction defects before being hired to testify in this or related cases." *Id.*

67. *Daubert*, 43 F.3d at 1317.

68. *E.g.*, *Natl. Bank of Commerce v. Associated Milk Producers, Inc.*, 191 F.3d 858, 864 (8th Cir. 1999) (excluding expert opinions not based on "any pre-litigation" research); *Braun v. Lorillard, Inc.*, 84 F.3d 230, 234 (7th Cir. 1996)

peer-review criteria.⁶⁹

B. *Did The Expert Rule Out Other Possible Causes?*

Specific causation opinions have often been particularly difficult for trial courts to fit into the *Daubert* framework. For example, while peer-reviewed studies conducted according to accepted methodology can resolve general causation issues – *i.e.*, can a drug cause a harmful condition⁷⁰ – studies cannot provide a framework for addressing specific causation issues – *i.e.*, did the drug cause the condition in this particular plaintiff. Merely proving that the plaintiff received a drug known to cause a certain condition, and that the plaintiff later developed that condition, does not establish a causal link.⁷¹ Instead, differential diagnosis – the process of eliminating other possible causes – is an essential methodological component in establishing specific causation.⁷²

Differential diagnosis is also important in design defect cases,

("[Plaintiff's expert] had never tested human or animal tissues for the presence of asbestos fibers (or, so far as appears, for anything else) before being hired by the plaintiff's lawyer."), *cert. denied*, 117 S. Ct. 480 (1996); *Estate of Mitchell v. GenCorp, Inc.*, 968 F. Supp. 592, 600 (D. Kan. 1997) ("We ... find it significant that all of plaintiff's experts developed their opinions expressly for the purpose of testifying. None of the witnesses has done any research on his theories outside the context of this suit.").

69. *E.g.*, *Lust v. Merrell Dow Pharm., Inc.*, 89 F.3d 594, 597 (9th Cir. 1996) ("Although [plaintiff's expert] published the 1984 article prior to this litigation, he was at that time already a professional plaintiff's witness. It is not unreasonable to presume that [his] opinion...was influenced by a litigation-driven financial incentive.").

70. In *Daubert*, the proffered expert testimony sought to answer a question of general causation—was there sufficient epidemiological evidence that the drug Bendectin caused birth defects? *Daubert*, 43 F.3d at 1319.

71. *Wooley v. Smith & Nephew Richards, Inc.*, 67 F. Supp. 2d 703 (S.D. Tex. 1999) (finding that a causal conclusion based solely on a temporal connection between surgical implant and alleged injuries does not constitute valid scientific methodology).

72. *Rutigliano v. Valley Bus. Forms*, 929 F. Supp. 779, 791 (D.N.J. 1996), *aff'd*, 118 F.3d 1577 (3d Cir. 1997) (excluding physician's causation testimony where she was unable to exclude other possible explanations); *see also* *Claar v. Burlington N. R.R. Co.*, 29 F.3d 499 (9th Cir. 1994) ("Neither Dr. Hines nor Dr. Nelson made any effort to rule out other possible causes for the injuries plaintiffs complain of, even though they admitted that this step would be standard procedure before arriving at a diagnosis."); *Alexander v. Smith & Nephew, P.L.C.*, 98 F. Supp.2d 1310 (N.D. Okla. 2000) (excluding testimony of expert who merely examined plaintiff and his medical records, without eliminating or even considering other possible causes); *Valente v. Sofamor, S.N.C.*, 48 F. Supp.2d 862 (E.D. Wis. 1999) (excluding expert testimony as to causation because expert gave conclusory opinions, failed to identify a specific defect and failed to perform differential diagnosis).

especially if an expert disregards, not just fails to eliminate, evidence of other potential causes. For instance, in *Kumho Tire* the district court rejected the plaintiff's expert's opinion that the tire separated due to a manufacturing defect because the expert disregarded evidence that suggested the separation resulted from abuse through over deflection, not a defect.⁷³ For this reason, the court concluded that the expert's testimony was fundamentally unreliable.⁷⁴

The trial court's inquiry does not end, however, simply because the expert purports to have excluded other causes. The court must further ensure that the "differential diagnosis" was conducted in accordance with appropriate methodological standards by a qualified expert.⁷⁵ This means that a trial court evaluating evidence excluding other causes in a drug or medical device case may be compelled to analyze the testimony of a number of experts in different fields. For example, to prove that birth defects in a particular plaintiff were caused by a drug that is a proven teratogen, expert testimony may be required in fields such as genetics, nutrition, toxicology, occupational health and statistics to eliminate the possibility that the birth defects were caused by a vitamin deficiency, a work-place chemical hazard or simply a genetic variation, rather than the drug.⁷⁶

C. *Has The Expert Established The Existence Of An Alternative Feasible Design?*

Many courts have concluded that an expert may not merely criticize the design of a product without establishing that a better

73. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 153-54 (1999).

74. *Id.*

75. *E.g.*, *Natl. Bank of Commerce v. Assoc. Milk Producers, Inc.*, 191 F.3d 858, 861 (8th Cir. 1999) (noting that even if a plaintiff "rules out" other causes, he must still produce evidence "ruling in" the asserted cause).

76. *See Kapsa & Meyer, supra* note 24, at 422; *see also* *Edwards v. Safety-Kleen Corp.*, 61 F. Supp. 2d 1354 (S.D. Fla. 1999) (excluding specific causation opinion that benzene exposure caused plaintiff's bone marrow disease where plaintiff's expert failed to determine whether other chemicals in plaintiff's workplace could have caused his condition and failed to cite any epidemiological or toxicologic studies linking MDS to certain levels of benzene exposure); *Nat'l. Bank of Commerce v. Dow Chem. Co.*, 965 F. Supp. 1490, 1523 (E.D. Ark. 1996), *aff'd*, 133 F.3d 1132 (8th Cir. 1998) ("[P]laintiffs have no qualified expert to offer an opinion to a jury which would permit that jury to conclude that genetics have been ruled out as a possible cause of Ashley's birth defects.").

reasonable alternative exists.⁷⁷ Typically, the proper methodology for proposing alternative designs includes more than just conceptualizing possibilities.⁷⁸ It often involves design development, prototypes and testing.⁷⁹ As one court noted, "the history of engineering and science is filled with finely conceived ideas that are unworkable in practice."⁸⁰ Courts have therefore consistently excluded expert testimony involving proposed design changes that have never been designed, developed and tested.⁸¹ Even in the absence of an alternative design and testing, however, an expert's testimony about design alternatives may be admissible if devices incorporating the expert's proposals have been manufactured and are in service.⁸²

77. *E.g.*, *Peitzmeier v. Hennessy Indus.*, 97 F.3d 293, 297 (8th Cir. 1996), *cert. denied*, 117 S. Ct. 1552 (1997) (noting that expert had "never designed, built, or tested a platform that has been shown to reduce the launch effect of an exploding tire and wheel assembly while adequately supporting the tire and wheel assembly during the tire-changing process").

78. *Watkins v. Telsmith, Inc.*, 121 F.3d 984, 992 (5th Cir. 1997).

79. *Id.* at 992 ("[T]he proper methodology for proposing alternative designs includes more than just conceptualizing possibilities. The district court appropriately noted the lack of testing of any of the proposed alternatives."); *Cummins v. Lyle Indus.*, 93 F.3d 362, 368-70 (7th Cir. 1996). The court concluded that the expert's opinion was not:

derived from the scientific method [where expert failed to conduct any testing regarding the degree to which the alternative design is compatible] with existing systems and circuits; the relative efficiency of the two designs; the short- and long-term maintenance costs associated with the alternative design; the ability of the purchaser to service and to maintain the alternative design; the relative cost of installing the two designs; and the effect, if any, that the alternative design would have on the price of the machine. Many of these considerations are product- and manufacturer-specific, and most cannot be determined reliably without testing.

Id. *Stanczyk v. Black & Decker, Inc.*, 836 F. Supp. 565, 568 (N.D. Ill. 1993) (excluding expert testimony because "the most important factor is whether the technique (or theory) being advanced by the expert can be or has been tested. The answer here is that it can be and, to some extent, was, and it failed. Clark offered no testable design to support his concept.").

80. *Stanczyk*, 836 F. Supp. at 568.

81. *E.g.*, *Jaurequi v. Carter Mfg. Co., Inc.*, 173 F.3d 1076 (8th Cir. 1999); *Dancy v. Hyster Co.*, 127 F.3d 649, 652 (8th Cir. 1997), *cert. denied*, 523 S. Ct. 1004 (1998).

82. *McPike v. Corgi S.P.A.*, 87 F. Supp.2d 890 (E.D. Ark. 1999) (admitting expert testimony regarding design defects in tire changing machine, even though expert's testimony was excluded in *Peitzmeier v. Hennessy Indus., Inc.*, 97 F.3d 293 (8th Cir. 1996), where expert's design proposals had been incorporated into existing machines).

D. Even If The Expert's Methodology Is Proper, Is There Too Great An "Analytical Gap" Between The Data And The Opinion Offered?

Some courts have cited the "analytical gap" language of *Joiner*⁸³ to reject an expert's ultimate conclusions, even though the expert followed accepted scientific methodology that otherwise satisfied the *Daubert* framework.⁸⁴ Expert testimony often involves some degree of interpretation or extrapolation from appropriately applied methodology and properly collected data. While a certain amount of extrapolation may be palatable, and even necessary, in the laboratory, the gate-keeping court must ensure that expert testimony does not make an analytical leap too tenuous for the courtroom.⁸⁵ Even a plausible hypothesis, the best that science can offer in many arenas, may not constitute knowledge capable of assisting a fact-finder.⁸⁶

E. Is The Expert Qualified To Give A Reliable Opinion?

Buried within *Daubert* is a philosophical subtext regarding the relationship between an expert's qualifications and the perceived reliability of his or her testimony. *Daubert* was, to a certain extent, a reaction against the concern that judges and juries are unduly influenced by heavily-credentialed experts whose testimony carries

83. Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997) ("A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.").

84. E.g., Clark v. Takata Corp., 192 F.3d 750 (7th Cir. 1999); JMJ Enter., Inc. v. Via Veneto Italian Water Ice, Inc., 1998 WL 175888 (E.D. Pa. 1998) (excluding certified public accountant's testimony as to breach of contract damages because of an "analytical gap" in his knowledge and reasoning).

85. *Joiner*, 522 U.S. at 146.

86. E.g., Rosen v. Ciba-Geigy Corp., 78 F.3d 316, 319 (7th Cir. 1996) ("Dr. Fozzard's deposition, while expressing what may be an insightful, even an inspired, hunch concerning the cause of the heart attack that Rosen experienced in June of 1992, lacks scientific rigor...[T]he courtroom is not the place for scientific guesswork, even of the inspired sort."), cert. denied, 117 S. Ct. 73 (1996); Edwards v. Safety-Kleen Corp., 61 F. Supp. 2d 1354, 1360 (S.D. Fla. 1999) ("At best, the literature and hypotheses put forward by Dr. Golomb show a possibility of future general acceptance, providing that future testing can confirm Dr. Golomb's theory until that point in time, however, the theory is not scientifically reliable."); Treadwell v. Dow-United Techs., 970 F. Supp. 974, 982 (M.D. Ala. 1997) ("In the instant action, the court adopts the reasoning and conclusions of the [other] courts, which found that 'the "science" of MCS's etiology has not progressed from the plausible, that is, the hypothetical, to knowledge capable of assisting a fact-finder, jury or judge.").

the potential to be "both powerful and quite misleading."⁸⁷ Therefore, the *Daubert* court sought to provide a framework to ensure the reliability of the substance of the testimony, separate and apart from the inquiry into the expert's qualifications, to protect juries from the influence of eminently well-qualified experts whose testimony was scientifically unreliable.⁸⁸

But courts applying the *Daubert* analysis have often become entangled in the interplay between qualifications and reliability.⁸⁹ *Kumho Tire* recognizes that in certain cases reliability concerns may depend more upon the expert's personal knowledge or experience than on the *Daubert* factors; in other words, the more qualified the expert, the more reliable the opinion.⁹⁰ This is especially true in instances where the expert's personal experience is essential to the methodology or analysis underlying the opinion.⁹¹

In other instances, an expert's qualifications may also appropriately influence the court's assessment of reliability. Whether overt or not, courts do, and should, make distinctions between testimony from "the marginally-qualified full-time expert witness who is testifying about a methodology that she has not employed in real life" and "the highly credentialed expert who has devoted her life's work to the actual exercise of the methodology upon which her testimony is based."⁹² Thus, even when an expert's resume satisfies the

87. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 595 (1993).

88. Stated another way, "The *Daubert* Court's enthusiasm for barring some scientific testimony has to reside in an unstated cynicism, about both the character of some expert witnesses (they are charlatans) and the capacities of juries (compared to judges) to detect charlatans." Michael H. Gottesman, *Admissibility of Expert Testimony After Daubert: The "Prestige" Factor*, 43 EMORY L.J. 867, 879 (1994).

89. E.g., *United States v. Downing*, 753 F.2d 1224, 1238-39 (3d Cir. 1994) (proposing three additional *Daubert* factors: the degree to which an expert testifying is qualified, the relationship of a technique to more established modes of scientific analysis and the non-judicial uses to which the scientific technique is put).

90. *Kumho Tire Co., Ltd. v. Charmichael*, 526 U.S. 137, 151 (1999). Even in these cases, however, "some of *Daubert*'s questions can help to evaluate the reliability even of experience-based testimony." *Id.*

91. E.g., *Am. Computer Innovators, Inc. v. Elec. Data Sys. Corp.*, 74 F. Supp.2d 64, 69 (D. Mass 1999) (holding "investment consultant's" proposed testimony regarding market size was methodologically sound, even though it was simply based on experience, because "this expert has in-depth, lengthy, personal experience in the very area in question. He is not analogous to the all-purpose engineer who offers testimony on everything from refrigerators to diapers to air-plane engines."); *Lillis v. Lehigh Valley Hosp., Inc.*, No. Civ. 97-3459, 1999 WL 718231, at *8 (E.D. Pa. Sept. 3, 1999) (holding physician's testimony regarding appropriate hospital standards admissible based, in part, on his qualifications).

92. Michael H. Gottesman, *Admissibility of Expert Testimony After Daubert: The*

Rule 702 qualification threshold, the expert's credentials and professional background may color the court's view of the reliability of the expert's opinions.

V. CONCLUSION

Kumho Tire is especially significant in product liability litigation for three reasons. First, it compels the trial court to exercise its gate-keeping function as to all experts, whether their testimony relates to product design, warnings issues, causation or damages. Second, *Kumho Tire* requires the trial court to make a preliminary determination as to which *Daubert* factors or other reasonable measures of reliability should apply to its evaluation of an expert's testimony. Finally, it invites courts to create and apply reliability factors in addition to those articulated in *Daubert*. In so doing, *Kumho Tire* has expanded and intensified the trial court's duties in examining expert testimony. At the same time, it has provide attorneys with the opportunity to assist the court in discharging its gate-keeping duties by defining the relevant reliability factors, including factors other than those identified in *Daubert*.

"Prestige" Factor, 43 EMORY L.J. 867, 881 (1994).

* * *